Illinois
Environmental
Protection Agency

Office of Public Information
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Summer 1987

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Division of Public Water Supply

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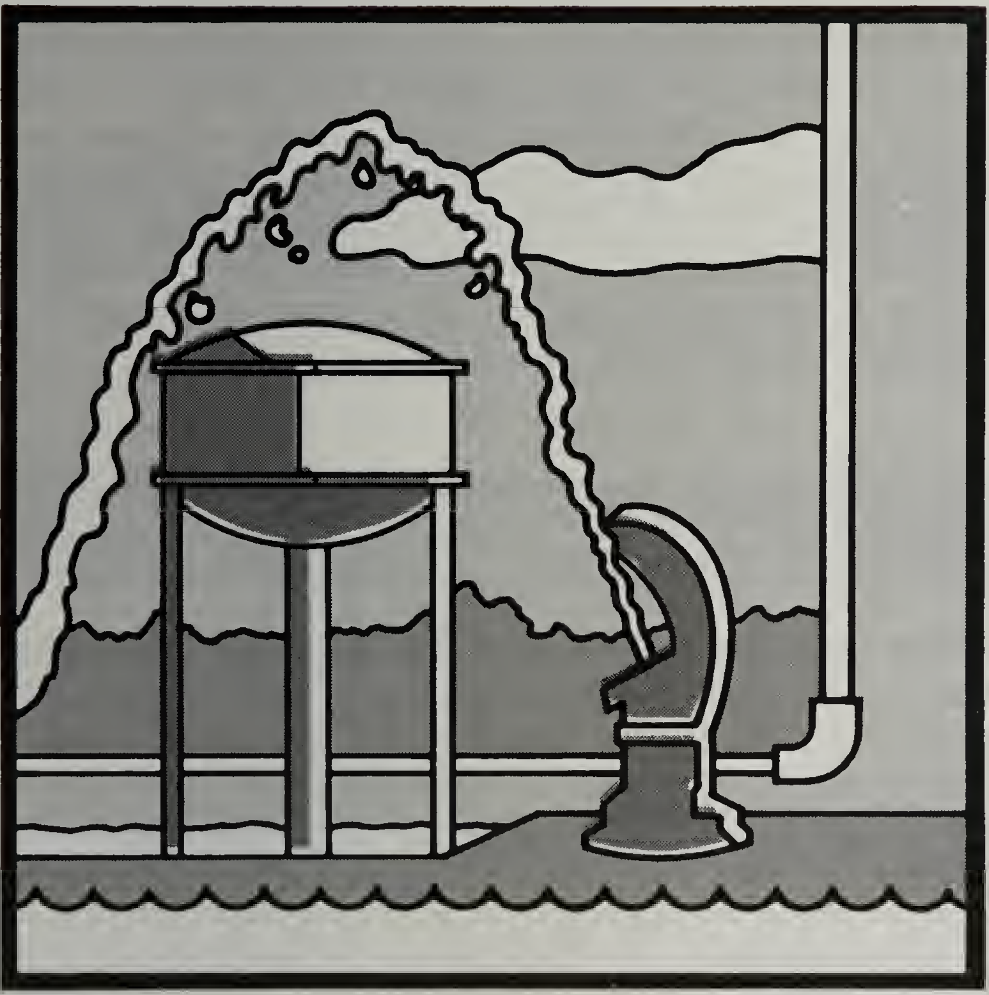

The Illinois Environmental Protection Act mandates that "state supervision of public water supplies is necessary in order to protect the public from disease and to assure an adequate supply of pure water for all beneficial uses". The Division of Public Water Supplies (DPWS) is responsible for administering the drinking water program for IEPA.

Nearly 2000 public water supply systems deliver over 1.77 billion gallons of safe, clean drinking water to Illinois water consumers each day. The majority of public water supplies (65 percent) pump water from underground wells for treatment and distribution to consumers. The largest percentage of the population (70 percent) consumes surface water, due to the large number of people in the Chicago metropolitan and suburban areas who receive treated water from Lake Michigan.

Illinois has not had a significant waterborne epidemic in over 50 years. Constant, careful monitoring of the operation of water supplies in the state by water supply custodians has ensured that safe drinking water is delivered to residents served by public water supplies.

Compliance Monitoring/Enforcement

Field personnel inspect public water supply systems to evaluate their operational performance and conformance with Illinois regulations, respond to complaints and requests for assistance, and prepare enforcement cases. When violations of standards, permit conditions or certification requirements occur, enforcement action is generated by IEPA through the Office of the Attorney General.

Water Quality Monitoring

Water supplies are required to demonstrate the safe quality of their water through routine sampling programs. Water is tested for microbiological, radiological, organic and inorganic chemical parameters. Public notice must be issued by supplies which fail to meet water quality standards, so that water consumers are aware of the condition of their water.

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Permits

Facilities which plan to construct new facilities, install new equipment or modify existing equipment are required to obtain a construction permit. All systems are also required to obtain an operating permit before new construction can be put on line. Permits are also required for algae control, pesticide application upstream of public water supply intakes and waste disposal.

Operational Monitoring & Compliance

Water supply personnel must demonstrate their competence in the operation of water supply equipment and processes. A properly certified operator must be in responsible charge of the treatment and distribution facilities of the supply at all times. Personnel who perform turbidity tests must demonstrate their ability to correctly test and interpret turbidity samples. Cross-connection control device inspectors must demonstrate their competence by completing both a written and performance examination. Well-trained, experienced personnel significantly contribute to the safe, smooth, efficient operation of the public water supply.

Emergency Response

DPWS personnel assist water supplies in resolving emergencies that threaten the safety or quantity of drinking water. Field personnel provide on-site or advisory evaluation of threats such as bacterial contamination, natural disasters such as floods, droughts, and storms, and hazardous material spills and contaminations. Immediate response is provided to ensure that public health is protected.

Groundwater

Water samples are collected from public water supply wells and analyzed for the presence of inorganic and organic chemicals. Detection of groundwater contamination allows water supply officials to take appropriate action to protect the water supply and to eliminate the source of contamination.

A program to monitor all water supply wells for organic contaminants is underway in Illinois. A plan to protect Illinois' groundwater resources has been developed by the Agency, and presented to the Governor, General Assembly and Pollution Control Board. When contamination is detected, the Agency works with the water supply to eliminate the source of contamination or to locate an alternate source of water.

Safe Drinking Water Act

The federal Safe Drinking Water Act, PL-93-523, as amended, gives USEPA the authority to establish drinking water standards and to protect underground water supplies against contamination by underground injection of wastes or other materials. Illinois received primary enforcement authority of these regulations in 1979. Amendments to the Act in 1986 established a schedule for the development of additional water quality standards, increased the stringency of penalties for violators, extended requirements for public notification, provided protection for the well head area, and established a sole-source aquifer demonstration program.

The division routinely performs surveillance and monitoring activities to ensure that water quality and plant performance meet state and federal standards. Each year, activities include:

- conducting over 1000 engineering inspections to discover defects needing correction;
- visiting nearly 2000 public water supply systems to assist operators and owners;
- reviewing more than 16,000 operating reports;
- processing more than 1600 permit applications;
- assisting other organizations, such as community colleges, prepare and present training courses;
- conducting operational personnel performance tests throughout the state for turbidity analysts, cross-connection control device inspectors and water supply operators;

- certifying approximately 375 new operators per year;
- analyzing 100,000 microbiological samples, nearly 5000 inorganic chemical analyses, slightly more than 10,000 organic chemical analyses and nearly 7500 radiological analyses of water from all public water supplies in the state.

Water Sources

Illinois residents drink water from three basic sources:

deep aquifers - underground bodies of water flowing through layers of porous rock;

"drift" wells - water supplies flowing gradually through underground sand and gravel, and

surface waters - streams, rivers, lakes, springs and reservoirs.

In rural Illinois, the average water consumption for all purposes can be as low as 60 gallons per day per person, while water customers in urban industrial areas of the state consume as much as 300 gallons per day per person. The great difference in consumption figures is due to the averaging of industrial consumption with consumer consumption in the urban areas.

Treatment

There are many methods of treating the water we drink.

Chlorination - addition of chlorine to water, to disinfect and control bacteria and other organic matter in raw water, and provide protection from contamination in the distribution system.

Aeration - a process which adds oxygen to the water, liberating harmful gases and changing dissolved iron and manganese to a solid form for ease in removal.

Coagulation - addition of alum and other chemicals to raw water producing a "floc" or cloud of small particles which sink quickly, trapping and removing color, turbidity, some contamination and other unwanted substances from the water.

Sedimentation - the settling out of solids by gravity.

Filtration - the mechanical process that removes fine particulate solids from water by passing it through special types of sand or other materials.

Softening - removal of excess hardness caused by calcium and magnesium minerals dissolved in the water.

Fluoridation - addition of compounds containing fluorine to obtain the maximum benefit for dental health. This process is rigidly controlled to provide the optimum concentration for prevention of tooth decay.

Every community water supply in Illinois is required by federal and state laws to ensure that its water meets minimum standards of quality. Even non-community supplies such as trailer parks, highway service stations, camping sites and small motels with their own water supplies are covered by regulations. All residents in Illinois can be assured that the water they drink — no matter where they go in the state — will be safe. The IEPA and the Illinois Department of Health have cooperative programs to monitor the quality of water in Illinois.

Water use has changed dramatically over the past thirty years. Traditionally, water was used for consumption and cleanliness. Use of water to produce power, in industrial processes, mining, agriculture and other commercial efforts has changed the water supply industry. The potential for contamination or pollution has increased, just as uses of water have multiplied.

Cross-Connection

One of the most dangerous types of contamination can occur through a cross-connection. A cross-connection is any piping which connects a drinking water system with a source of liquid, gas or a soluable substance which can be back-siphoned or can flow through back pressure into the drinking water system. Back-siphonage is comparable to the suction action through a straw. Back pressure results when the pressure in one piping system is greater than that of the connected system — contamination can be pushed back into a drinking water system through back pressure. Garden hose connections, sprinklers, sump pumps, kitchen sprayers and other common household plumbing devices which extend the water line can become cross-connections. All community public water supplies are required to actively enforce a cross-connection control program to protect their water consumers. Where connections which could result in contamination exist, proper protective devices must be installed and maintained, or the connection eliminated. Devices must be tested each year to detect malfunctions. Persons who test these devices must be approved by IEPA.

For further information please contact:

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